

PATENT
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Application For United States Letters Patent

for

Endless Track For Industrial Or Agricultural Vehicles

by

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TITLE OF THE INVENTION

Endless track for industrial or agricultural vehicles.

5 FIELD OF THE INVENTION

The present invention relates to the field of endless tracks for track laying vehicles and, in particular, to the field of flexible tracks for use on industrial or agricultural vehicles.

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BACKGROUND OF THE INVENTION

The propulsion system found on industrial and agricultural vehicles consists of a pair of longitudinally spaced apart wheel structures which are arranged on opposite sides of the vehicle's chassis, the latter being driven by a pair of
15 endless, substantially inextensible tracks, each having an inner surface and an outer surface. These endless tracks consist of a flexible body formed of rubber material and are usually reinforced with one or more layers of fabric or steel material. The body includes series of longitudinally spaced profiles upon the outer surface thereof to provide traction to the vehicle and a series of
20 longitudinally spaced drive lugs integrally moulded to the inner surface of the track to guide the track relative to driving and tracking wheels on the vehicle. The driving sprocket have drive teeth or bars positioned around the outer periphery thereof and positioned to engage the drive lugs on the inner surface of the track.

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One such track structure is illustrated and described in US patent 5,279,378 issued January 18, 1994 to Caterpillar Inc. Similar tracks are also illustrated and described in US patent 5,005,922 issued April 9, 1991 to Edwards & Co. and U.S. patent 5,984,438 issued November 16, 1999 to Tsunoda et al.

Drive lug deterioration due to the excessive torque transmitted to the drive lug and fatigue have been observed on many tracks resulting in drive lug delamination, chunking or even broken lugs.

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OBJECTS AND STATEMENT OF THE INVENTION

The object of the present invention is to overcome the above-described problem with drive lug deterioration.

- 10 This is achieved by adding a fabric layer in the rubber track, which layer extends inside the drive lugs thereby reinforcing the structure and resulting in less deformation of the drive lug; this is due to the transfer of the exerted loads to the carcass by the fabric.
- 15 The present invention therefore relates to an endless track for industrial or agricultural vehicle which comprises a body formed of rubber material having an outer surface displaying a series of ground engaging profiles longitudinally spaced along the surface and an inner surface displaying a series of longitudinally spaced drive lugs adapted to be engaged by drive sprockets on
- 20 the vehicle for retaining the track on the vehicle and for driving the vehicle; the drive lugs having a given width and height; the body includes, embedded therein, a layer of fabric longitudinally extending in the body at a distance inwardly from the inner surface; the fabric has a width substantially less than the given width of the drive lugs; the fabric extends in the drive lugs at a
- 25 location corresponding substantially to the distance to thereby increase lug rigidity.

In one preferred form of the invention, the fabric is made of a material taken from the group including cotton, polyester, nylon, kevlar, glass fibers, steel etc.

Other objects, advantages and features of the present invention will become more apparent upon reading of the following non restrictive description of preferred embodiments thereof, given by way of example only with reference to the accompanying drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

In the appended drawings:

Figure 1 is an elevational view showing a track assembly including a track
10 made in accordance with the present invention, mounted about idler and drive wheels;

Figure 2 is a cross-sectional view of the track;

Figure 3 is a perspective view of a section of the endless track made in accordance with the present invention; and

15 Figure 4 is a cross-sectional view taken on lines 4-4 of figure 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to Figure 1, there is shown a track assembly, generally denoted 10,
20 which may be found on each opposite side of the chassis of a track propelled industrial or agricultural vehicle (not shown). The structure usually includes a drive wheel 12, a front idler wheel 14 and a series of track contacting rollers 16, the wheels and rollers being included within the loop defined by an endless track or belt 18. Traction to the track is achieved by its high frictional
25 engagement with the wheels 12 and 14. The endless track made in accordance with the present invention comprises an endless elongated body made of rubber material having an outer surface 20 and an inner surface 22.

With reference to figures 2 and 3, the outer surface 20 comprises two rows of longitudinally spaced tread members 26 and 28 that provide traction to the vehicle while the inner face comprises a series of longitudinally spaced drive lugs 30 which are adapted to provide guiding of the track relative to the wheels
5 of the drive structure as well as driving the track.

These drive lugs may have various shapes, such as the rounded surface 32 with opposite inclined side faces 34 illustrated in figure 3 or the trapezoidal shaped lugs illustrated in USP 6,300,396 issued October 9, 2001 to Tsunoda
10 et al.

Referring to figure 4, it can be seen that the track 10 includes a series of embedded layers of fabrics 50, 52, 54 and 56, which extend transversely for a major portion of the track width.

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The present invention is concerned with providing an additional layer of fabric 58 throughout the longitudinal direction of the track; however, its width is slightly less than the width of the drive lugs 30 so as to be completely embedded in each drive lug of the track. This layer of fabric 58 is located at a
20 given distance from the inner surface of the track and at a given distance from the rounded surface 32 of the lug so as to ensure its retention inside the track when the track is in use.

Although the invention has been described above with respect to one specific
25 form, it will be evident to the person skilled in the art that it may be refined and varied in any ways. It is therefore wished to have it understood that the present invention should not be limited in interpretation except by the terms of the following claims.